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## ABSTRACT OF THE DISCLOSURE

A radioactive substance decontamination method and apparatus which decontaminate the metal member contaminated by radioactive substance in a shorter period of time. This apparatus comprises; (1) multiple reducing decontamination tanks having different radiation control values as the upper limit values for radiation dose of reducing decontamination agent stored inside; (2) a carrier for immersing the aforementioned metal member into the aforementioned multiple reducing decontamination tanks and a washing tank; (3) a tube for transferring into the second reducing decontamination tank where the aforementioned radiation control value is the second value which is higher than the aforementioned first value, the reducing decontamination agent in the first reducing decontamination tank where the aforementioned radiation control value is the first value out of the aforementioned multiple reducing decontamination tanks; (4) a reducing agent decomposer for decomposing a component contained in the reducing decontamination agent of the reducing decontamination tank where the aforementioned radiation control value is the highest out of the reducing decontamination tanks connected by the aforementioned tube; and (5) a washing tank for washing the aforementioned reducing decontamination agent deposited on the aforementioned decontaminated metal

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member.